

Food Service Construction Guide

Minnesota Department of Health

Environmental Health

Food, Pools and Lodging Services Section

PO Box 64975

St. Paul, Minnesota 55164-0975

651-201-4500



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Minnesota Department of Health
Environmental Health
Food, Pools and Lodging Services Section
P.O. Box 64975
St. Paul, Minnesota 55164-0975

Phone: 651-201-4500

Website: <http://www.health.state.mn.us/divs/eh/food/license/planreview.html>

Rev4/2013

PURPOSE

This document is intended to assist in the submission of information for plan review. For further information, please refer to the Web site at <http://www.health.state.mn.us/divs/eh/food/license/index.html> or contact the Minnesota Department of Health at 651-201-4500.

PLAN REVIEW

The Minnesota Department of Health (MDH) must approve plans before new construction or remodeling may begin. The regulatory authority is responsible for determining what meets code and standards for construction and materials. For new construction, food may not be brought into the establishment and food preparation may not take place until plans have been reviewed and approval by regulatory authority. Some remodeling projects may require the facility to close during construction, please consult with the regulatory authority for guidance.

In some cases, MDH delegates to local health departments. Please go to this web page for a map of delegated agencies: <http://www.health.state.mn.us/divs/eh/food/license/delegation.html>

Plan Review Process

Plans are reviewed in the order they are received. Once your plan comes up for review you will be contacted by a plan reviewer either by phone or email. After the review is finished you will be sent a letter reporting the findings of the review. Starting construction prior to approval may result in costly corrections and delayed openings.

Plan Submittal

Submit Food and Beverage Service plans with application and fee to:

**Minnesota Department of Health
Food, Pools and Lodging Services Section
625 Robert Street North
P.O. Box 64975
St. Paul, Minnesota 55164-0975**

New plan review application: <http://www.health.state.mn.us/divs/eh/food/license/prappncfbl.pdf>

Remodeling application: <http://www.health.state.mn.us/divs/eh/food/license/prappremfbl.pdf>

Areas of Review

Kitchens	Bars	Wait stations
Condiment counters	Beverage dispensing	Buffets
Salad bars	Mop sink areas	Employee restrooms
Storage rooms	Hoods & Ventilation	Plumbing fixtures
Refuse areas	Warewashing	Outdoor bars & beverage service
Assisted Living	Memory Care	10 & under board and lodging

Plan Submittal Requirements

In order to complete a timely review of your project, all the information listed below should be included with the plan. Plans may take up to 30 days to review. Incomplete plans may take longer.

- ☐ A completed plan review application with the required fees payable to Minnesota Department of Health
- ☐ One complete set of plans drawn to scale, including proposed layout, mechanical schematics, construction material
- ☐ Finish schedule for floors, base cove, wall and ceilings
- ☐ A proposed menu
- ☐ A description of the project
- ☐ Equipment locations on the layout
- ☐ Equipment specifications sheets for all equipment.
(All food service equipment shall be National Sanitation Foundation International (NSF) or equivalent – Intertek Testing and Certification (ETL), Underwriters Laboratory (UL), Canadian Standards Association (CSA) as meeting applicable NSF International standards for sanitation.)
- ☐ One complete set of elevations and drawings for all custom equipment
- ☐ Counters and cabinetry shop drawings indication cabinet construction and countertop finish.
- ☐ Information on well (unique well number) and septic system (certificate of compliance) for private systems
- ☐ A copy of the zoning approval or building permit from the local unit of government
- ☐ Other information may be requested during the plan review process.

Plumbing plans need to be submitted to a separate department:

Minnesota Department of Labor and Industry
Plumbing Plan Review and Inspection
443 North Lafayette Road
St. Paul, Minnesota 55155-4343
651-284-5067
<http://www.doli.state.mn.us/CCLD/Plumbing.asp>

LICENSING

Submission of Fees and Applications

In addition to the plan review fee, there is a separate license fee. An application for license will be mailed along with the plan review letter and report. Prior to requesting an opening inspection, the license fee must be paid.

Certified Food Manager Requirements

A Certified Food Manager (CFM) is required at most foodservice facilities. For information about Food Manager Certification see the website listed below or call 651-201-4500.

<http://www.health.state.mn.us/divs/eh/food/fmc/index.html>

Pre-Opening Inspections

MDH plan reviewers/sanitarians may make on-site inspections of the facility during construction/remodeling or equipment installation. **Please contact us 14 days prior to the intended opening date to schedule an opening inspection. The license applications and fees must be paid and an opening inspection conducted prior to being given approval to operate.**

Minnesota Food Code Chapter 4626.0505

NSF/ANSI Food Equipment Standards

Standard 2: Food Equipment

Standard 3: Commercial Warewashing Machines

Standard 4: Commercial Cooking and Hot Food Storage Equipment

Standard 6: Dispensing Freezers

Standard 7: Food Service Refrigerators and Storage Freezers

Standard 8: Commercial Powered Food Preparation Equipment

Standard 12: Automatic Ice Making Equipment

Standard 13: Refuse Compactors and Compactor Systems

Standard 18: Manual Food and Beverage Dispensing Equipment

Standard 20: Commercial Bulk Milk Dispensing Equipment

Standard 25: Vending Machine and Food and Beverage

Standard 26: Pot, Pan and Utensil Commercial Spray-Type Washing Machines

Standard 29: Detergent and Chemical Feeders for Commercial Spray-Type Dishmachines

Standard 35: Laminated Plastics for Surfacing Food Equipment

Standard 51: Plastic Materials and Components Used in Food Equipment

Standard 59: Food Carts

Standard C-2: Special Equipment and Devices

NSF International Website: <http://www.nsf.org>

GLOSSARY

Approved. "Approved" means acceptable to the regulatory authority based on a determination of conformity with principles, practices, and generally recognized standards that protect public health.

Beverage. "Beverage" means a liquid for drinking, including water.

Corrosion-resistant material. "Corrosion-resistant material" means a material that maintains acceptable surface cleanability characteristics under prolonged influence of food contact, the normal use of cleaning compounds and sanitizing solutions, and other conditions of the use environment.

Dry storage area. "Dry storage area" means a room or area designated for storing packaged or containerized bulk food that is not potentially hazardous and dry goods, including single-service items.

DOLI. Department of Labor and Industry

Easily cleanable. "Easily cleanable" means a characteristic of a surface that:

- A. allows effective removal of soil by normal cleaning methods; and
- B. is dependent on the material, design, construction, and installation of the surface.

Equipment. "Equipment" means a freezer, grinder, hood, ice maker, meat block, mixer, oven, reach-in refrigerator, scale, sink, slicer, stove, table, temperature measuring device for ambient air, vending machine, warewashing machine, or other article that is used in the operation of a food establishment.

Equipment does not include hand trucks, forklifts, dollies, pallets, racks, skids, or other items used for handling or storing large quantities of packaged foods that are received from a supplier in a cased or overwrapped lot.

Extensive remodeling. "Extensive remodeling" means an addition or change to the physical facility, a major equipment addition, or an equipment installation that result from changes in the menu.

Extensive remodeling does not include redecorating, cosmetic refurbishing, altering seating design, or reducing seating capacity.

Food. "Food" means a raw, cooked, or processed edible substance, ice, beverage, or ingredient used or intended for use or for sale in whole or in part for human consumption, or chewing gum.

Food-contact surface. "Food-contact surface" means:

- A. a surface of equipment or a utensil with which food normally comes into contact; or
- B. a surface of equipment or a utensil from which food may drain, drip, or splash:
 - (1) into a food; or
 - (2) onto a surface normally in contact with food.

HACCP plan. "HACCP plan" means a written document that delineates the formal procedures for following the hazard analysis critical control point principles developed by the National Advisory Committee on Microbiological Criteria for Foods.

NSF International. National Sanitation Foundation, an independent, not-for-profit, non-government organization that evaluates food service equipment
Plumbing fixture means a receptacle or device that:

- A. is permanently or temporarily connected to the water distribution system of the premises and demands a supply of water from the system; or
- B. discharges used water, waste materials, or sewage directly or indirectly to the drainage system of the premises.

"Ready-to-eat food" means food that is in a form that is edible without washing, cooking, or additional preparation by the food establishment or the consumer and that is reasonably expected to be consumed in that form.

Regulatory Authority. "Regulatory authority" means the local, state, or federal enforcement body or authorized representative having jurisdiction over the food establishment.

Sanitization. "Sanitization" means the application of cumulative heat or chemicals on cleaned food-contact surfaces that, when evaluated for efficacy, yields a reduction of five logs, which is equal to a 99.999 percent reduction, of representative disease microorganisms of public health importance

Sealed. "Sealed" means free of cracks or other openings that allow the entry or passage of moisture
Sewage means liquid waste containing animal or vegetable matter in suspension or solution and may include liquids containing chemicals in solution.

Single-service article. "Single-service article" means a tableware, carry-out utensil, bag, container, placemat, stirrer, straw, toothpick, wrapper, or other item that is designed and constructed for one-time, one-person use.

Single-use article.

- A. "Single-use article" means a utensil or bulk food container designed and constructed to be used once and discarded.

Smooth. "Smooth" means:

- A. for a food-contact surface, free of pits and inclusions with a cleanability equal to or exceeding that of number 3 (100 grit) stainless steel;
- B. for a non-food-contact surface of equipment, equal to the surface of commercial grade hot-rolled steel free of visible scale; or
- C. for a floor, wall, or ceiling, even or level with no roughness or projections that render the surface difficult to clean

Utensil. "Utensil" means a food-contact implement or container used in the storage, preparation, transportation, dispensing, sale, or service of food, including kitchenware or tableware that is multiuse, single-service, or single-use; gloves used in contact with food; and food temperature measuring devices.

Warewashing. "Warewashing" means the cleaning and sanitizing of food-contact surfaces of equipment and utensils.

Food Zone: surface material in a food zone shall be smooth, corrosion resistant, nontoxic, stable and nonabsorbent under use conditions. They shall not impart odor, color, taste, or contribute to the adulteration of food. Exposed surfaces shall be easily cleanable.

- Examples are: surfaces that food is prepared on including cooking equipment, counters food is prepared on, inside coolers and equipment that comes into direct contact with food.

Nonfood Zone: surfaces shall be smooth, easily cleanable, noncracking, nonchipping, and corrosion resistant by plating, coating or painting. Lead based or other toxic material shall not be used.

- Examples are: dry storage areas, floors and ceilings

Splash Zone: surfaces shall be durable, nonabsorbent, corrosion resistant, smooth and easily cleanable.

- Examples are: walls behind sink, warewashing, food preparation areas, open food storage areas, beverage areas

EQUIPMENT

General Information

1. Food and beverage equipment shall meet the applicable standards for one of the following:
 - a. National Sanitation Foundation (NSF),
 - b. Edison Testing Laboratories (ETL) to NSF Standards,
 - c. Underwriters Laboratory (UL) to NSF standards, or
 - d. Canadian Standards Association (CSA) to NSF Standards.
2. Used equipment may be approved if it meets NSF standards when it was manufactured has been properly maintained and not modified. Used equipment must be approved by the Regulatory Authority prior to installation.
3. Primary food contact surfaces shall be of stainless steel construction in compliance with NSF Standard No. 2 or equivalent.
4. Plastic laminate surfaces are not acceptable for food contact and food preparation surfaces.
5. Table-mounted equipment that is not easily movable shall be sealed to the table or elevated on four (4) inch NSF legs.
6. All floor mounted equipment shall be elevated on six (6) inch NSF legs or casters. Display cases may be less than six inches if a removable panel for cleaning the floor is part of the equipment.
7. Enough equipment for cooking, heating and hot holding shall be provided. Equipment should be sufficient in number and capacity to meet the needs of the establishment as determined by the Regulatory Authority.
8. All custom fabricated equipment shall meet NSF International or equivalent standards and bear the name of the manufacturer and an NSF sticker indicating which standard the equipment meets.
9. Wood is prohibited in food, beverage, utensil washing and storage areas. Including, wood doors or frames, wood shelving, wood cabinets and wood windows.

Ventilation

1. All cooking equipment that produces excessive heat, grease vapor, steam, fumes, smoke, condensation or odor shall be located under a local exhaust ventilation system. Visit <http://www.mda.state.mn.us/dairyfood/ventguide.pdf> for additional ventilation guidelines. Contact the local building official for ventilation requirements.
2. Make-up Air:
 - a. Make-up units must be electrically interlocked with ventilation exhaust hoods.
 - b. The Building Official will test and approve the ventilation system.
 - c. If there is no Building Official, a licensed and bonded mechanical contractor must be used for design and install.

Exhaust Hoods

1. All rooms shall have sufficient, tempered make-up air and exhaust ventilation to keep them free of excessive heat, steam, condensation, vapors, obnoxious or disagreeable odors, smoke, and fumes.
2. Ventilation hood systems or equivalents must be sufficient in number and capacity to prevent grease or condensation from collecting on the walls and ceilings.
3. Ventilation hoods must be constructed and installed in accordance with Minnesota Building code, the 2000 MN Mechanical Code (MN Rules, Chapters 1305 & 1346), NSF Standard No. 2 and the National Fire Protection Association (NFPA 96-2001).
4. All open sides of the ventilation hood must overhang equipment by at least 6 inches.
5. Cooking equipment generating BTU output of 12,000 BTU/hour (3.7kW) or more is required to be operated under a ventilation hood. See the Minnesota Commercial Kitchen Ventilation Guidelines for information on ventilation requirements.
<http://www.mda.state.mn.us/about/divisions/~media/Files/food/business/ventguide.ashx>

6. Grease filters or other grease extracting equipment, used in a ventilation hood, shall be designed to be readily removable for cleaning and/or replacing if not designed to be cleaned in place.
7. Ventilation hood systems and components in food preparation and warewashing areas must be designed to prevent grease or condensation from draining or dripping onto food, equipment, utensils, linens, and single-service and single-use articles.
8. Above-counter mechanical dishmachines require a Type II ventilation hood to exhaust condensate and humidity. Under-counter warewashing machines and glass washers may not require a ventilation hood. Check with the Regulatory Authority for requirements.
9. Used hoods shall meet NSF International or equivalent standards and identify the manufacturer and be approved by the Regulatory Authority.
10. When no building official is available, the HVAC contractor must be licensed and bonded in the State of Minnesota.
11. Custom fabricated hoods must be made to NSF International or equivalent standards and bear the NSF sticker and name of the manufacturer. Galvanized hoods are not permitted.
12. Solid Fuel burning equipment shall have a separate ventilation system installed as specified by the Department of Labor and Industry or a local building official.
13. All smokers (solid fuel and gas) require an approved exhaust hood. Smoker must not be installed outside. In addition, the Minnesota Food Code requires exhaust hoods over smokers if the unit has a direct vent.
14. Insulated stainless steel, ceramic tile or equivalent shall be installed behind cooking equipment. See Appendix page 30.
15. Recirculating hoods need to be approved by the Department Of Labor and Industry (DOLI) or the local Building official. See Appendix page 27 for more information.

Refrigeration

1. Adequate refrigeration and freezers must be provided to support the intended menu. Additional freezers and refrigerators may be required by the Regulatory Authority to prevent cross-contamination and to provide for safe cold holding, cooling and display.
2. NSF standard No. 2 refrigerators may only be used for storage of pre-packaged food, canned or bottled beverages.

Walk-In Refrigerators/Beer Coolers/Freezer

1. Approved flooring for the walk-in cooler or freezer.
 - a. Quarry tile or ceramic tile.
 - b. Aluminum or stainless steel floor as provided by the manufacturer.
 - c. Poured flooring; information submitted before installation for approval.
 - d. Galvanized flooring is not permitted in walk-in units.
2. An integral basecove may include:
 - a. a quarry tile cove base.
 - b. stainless steel.
 - c. vinyl screed base provided by the manufacturer.
 - d. epoxy resin troweled up the wall (for poured flooring only).
 - e. The basecove shall provide a minimum cove of 3/8" radius at the floor juncture and should be sealed to the wall and floor.
 - f. Vinyl bases are not acceptable.
3. Walk-in refrigerators or freezers shall meet NSF international standards or equivalent. A walk in keg cooler is not recommended for food storage.
4. Shelving shall meet NSF standards for cold storage use and be corrosion resistant. Chrome-plated, zinc and galvanized shelving is not be permitted.

5. Condensate line from walk-in coolers should run to a floor drain located outside of the unit or to an evaporator pan as specified by the pump manufacturer.
6. No floor drains are allowed inside a walk-in refrigeration unit.
 - a. The area above the walk-in cooler freezer may not be used for storage.

Separate Outdoor Walk-In Refrigeration

1. These units must be designed for extra structural loads from snow or other environmental concerns. Their location needs to be approved by the local building official. It is recommended that exterior units be provided with a roof.
2. Condensate from drain lines may run onto the ground as long as it does not create an environmental nuisance.

Warewashing

1. General:

- a. Dishwashing facilities must be adequately sized to meet the needs of the establishment. Either a three compartment sink or a dishmachine must be provided.
- b. All warewashing machines must be provided with a ventilation hood to remove condensate, except under-counter type machines and bar glass washers may not require ventilation, check with the Regulatory Authority for requirements.
- c. A warewashing machine shall be equipped with a pressure gauge or similar device that measures the pressure in the hot water rinse cycle.
- d. A warewashing machine shall be equipped with a temperature measuring device that indicates the temperature of the wash and rinse cycle.
- e. Integral drainboards, utensil racks or tables large enough to accommodate all soiled and clean items shall be provided. The soiled dish table shall not drain into the washing compartment of the warewashing machine.
- f. All warewashing activities require an area for disposal of garbage and scrapping.

2. Chemical Sanitizing Machines:

- a. Shall be equipped with a device that indicates audibly or visually when additional chemical sanitizer is needed.
- b. Have space for a minimum of five racks for drying.
- c. Have a test kit for checking the sanitizer concentration of the rinse water.

3. Hot Water Sanitizing Machines:

- a. An additional booster heater may be required.
- b. Hot water sanitizing machines shall have space for a minimum of three racks for drying utensils.

4. Ventless Warewashing Machines:

- a. Ventless warewashing machines must be evaluated and approved by the local building official prior to installation.
- b. Where there is not a building official, the Regulatory Authority will approve installation.
- c. The ventless dishmachine must maintain a maximum relative humidity (RH) of 65%.

5. Undercounter Warewashing Machines:

- a. Machines must be on six inch legs/casters or skids.
- b. A warewashing machine under a three-compartment sink needs to be approved by the Regulatory Authority prior to installation.
- c. A flexible installation may be necessary so that the machine can be moved for cleaning.
- d. Provide space, dollies, tables or racks for air drying of clean equipment and utensils.

6. Three Compartment Sink:

- a. A three-compartment sink shall have integral drainboards.
- b. Each compartment shall be large enough to accommodate immersion of the largest utensil or piece of equipment if the sink is used for warewashing.
- c. When hot water is used for sanitizing, an integral heating device or fixture that meets NSF Standard No. 5 shall be installed. Device must be capable of maintaining a water temperature of 170° F.
- d. Soap and chemical dispensers attached to the faucet of a three-compartment sink must be installed according to Minnesota Plumbing Code Chapter 4715 and have appropriate backflow prevention.
- e. Approved racks, shelves or dish tables for storing soiled equipment and utensils and air drying clean equipment and utensils may be required.
- f. Have a test kit for checking the sanitizer concentration of the rinse water.

Storage/Shelving

1. Adequate storage areas and shelving are required for storing food, equipment, utensils, linens, single service and single use items must be provided. Items must be stored on approved shelving at least six inches off the floor.
2. For room finishes see “Finish Schedule Summary”.
3. Wood or other solid fuel, poisonous and toxic materials must be stored off the floor and stored so they do not contaminate food, equipment, utensils, linens, single service and single use items.

Dipper Wells

1. Dipper wells, with running water, are required when bulk ice cream is dispensed. A dipper well may also be required for other in-use food scoops.
 - a. The dipper well shall be located adjacent to the proposed area of use.
 - b. The water drain line shall have an approved air gap.
 - c. The dipper well shall be indirectly wasted to a floor drain or trapped waste line.
 - d. Metered dipper wells will be evaluated by the Regulatory Authority.

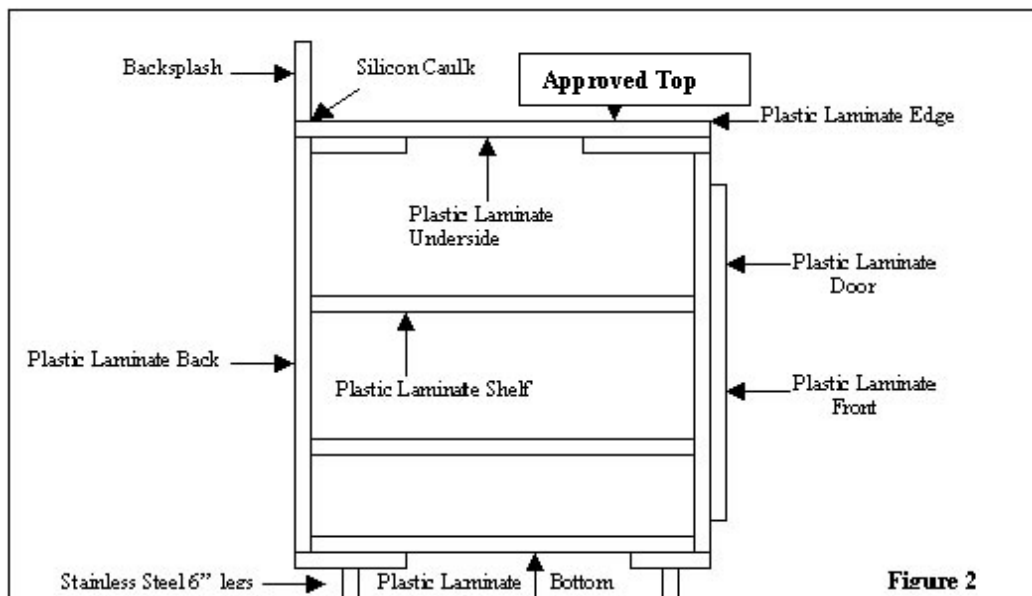
Customer Self-Service Buffets

1. Shall utilize mechanical refrigeration and/or hot-holding units.
2. Shall be indirectly wasted to a floor drain.
3. Shall be located on a smooth, durable, easily cleanable floor which extends three feet beyond the edge of the salad bars and buffets.
4. Single-service articles shall be dispensed individually wrapped or from an approved dispenser.
5. Cabinetry must be constructed to NSF Standard #35 with plastic laminate on all exposed surfaces. Wood cabinetry is not permitted. Sealed wood cabinet doors on breakfast buffets may be allowed. Approval prior to installation is required.
 - a. Cabinetry must be installed on with six (6) inch NSF legs or a solid masonry base with a cove base installed at the base/floor juncture.
 - b. Countertops must be either solid surface, granite, stainless steel or other approved material. Laminate countertops are not permitted.
 - c. Approved food shields must be provided: See examples appendix pages 29, 30 and 31

Employee Wait Stations/Service Counters/Cabinetry

1. Custom fabricated cabinets used in the wait station, alcohol service area, or customer self-service area must be finished with plastic laminate that meets NSF Standard No. 35. All exposed surfaces of the cabinets(s), including the underside of the cabinet or countertop, must be finished with plastic laminate or equivalent.

- Cabinetry may be installed in a foodservice establishment only in areas approved by the Regulatory Authority.
- Cut outs in millwork shall be sealed by the fabricator.
- All cabinets shall be on six-inch NSF legs or on a solid masonry base with approved base cove installed. Enclosed hollow bases are not permitted.
- Handsinks may not be installed in plastic laminated counters except in a limited food service.
- The bottom shelf under any plumbing or refuse area is recommended to be removed.



Equipment use on Cabinets

Equipment Type	Laminated Top Laminated Base	Stainless Top* Laminated Base	Stainless Top* Stainless Base
Self-service Coffee	Yes	Yes	Yes
Milk	Yes	Yes	Yes
Pop	Yes	Yes	Yes
Ice Bins, dipper wells	No	Yes	Yes
Hand Sink	No	Yes	Yes
Cold Drop-In pan	No	Yes	Yes
Hot Drop-In pan	No	Yes	Yes
Display Merchandiser (Popcorn, Pizza)	Yes	Yes	Yes
Counter Top Warmer (Soup, Sauces)	No	Yes	Yes
Point of Sales stations only	Yes	Yes	Yes
Blenders, Espresso machines, hard -plumbed coffee makers	No	Yes	Yes
Cutting Boards	No	Yes	Yes
Cooking Equipment (Fryer, Grill, Hot Plate, Waffle Iron)	No	No	Yes
Food Processor, Mixer, Chopper, slicers	No	No	Yes
Pop-up Toaster	Yes	Yes	Yes
Food Preparation Sink	No	No	Yes
Microwave	Yes	Yes	Yes
Tabletop Refrigerator/Freezer	Yes	Yes	Yes
Three compartment sink	No	No	No

**or equivalent material such as granite or solid surface may be used*

BEVERAGE AREAS

Beverage Dispensing Equipment

1. Beverage lines shall be run inside walls or ceilings, when possible.
2. Beverage lines extending through a floor or wall shall be installed so they do not obstruct the cleaning of floors and walls.
3. Beverage dispensing guns and drains shall not be installed directly over food, ice or clean glassware.
4. An approved stainless steel backflow preventer shall be installed on post-mix carbonated beverage systems. Copper tubing may not be used after the backflow preventer.
5. If PVC pipe is used as a beverage conduit, it must be 4" above the floor and the opening sealed with foam.
6. Customer self-service beverage dispensers should be push-button operated or lever-activated to allow for a contamination free fill.

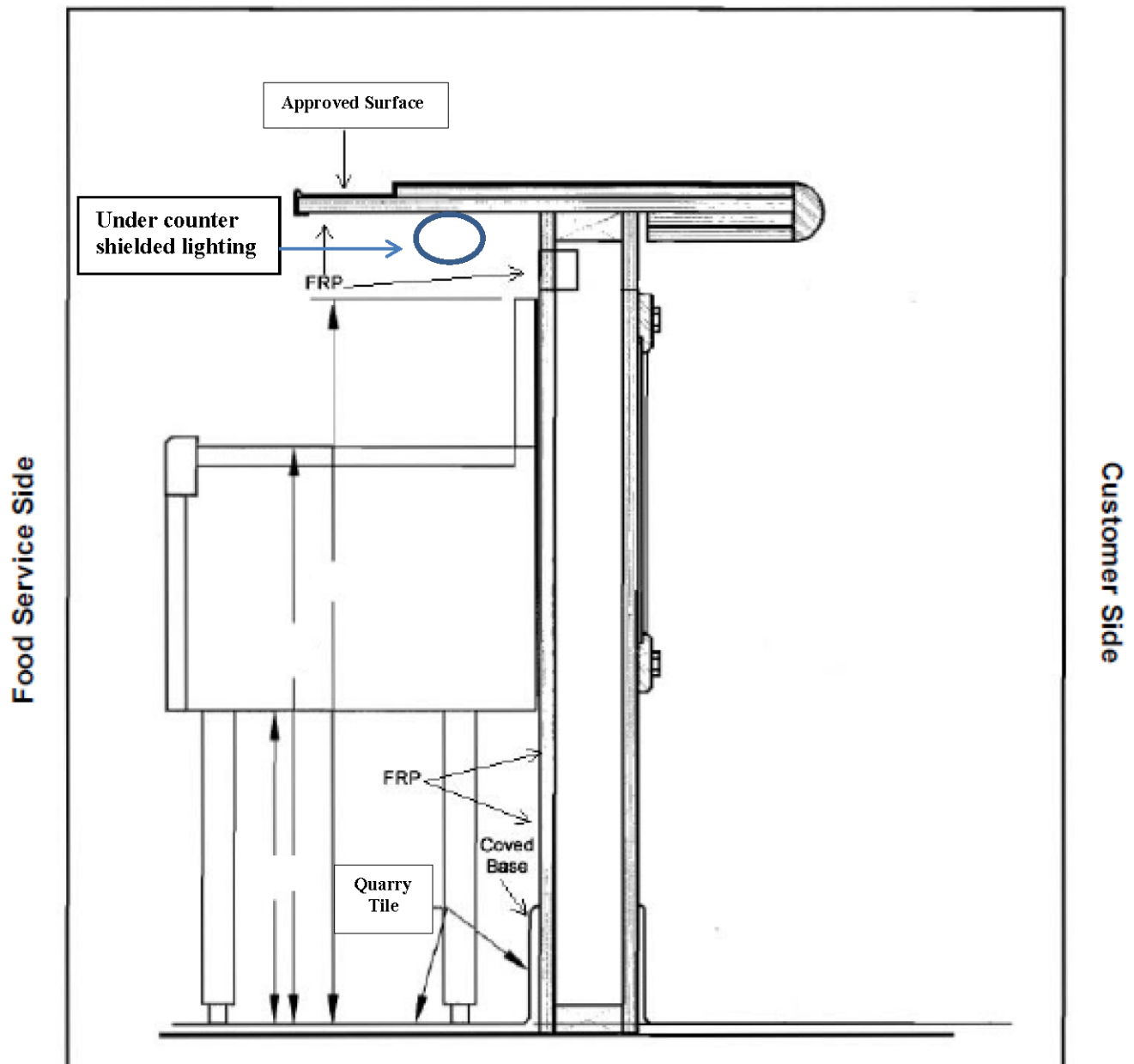
Espresso Areas

1. A separate handwashing sink may be required. The handsink may not be used as a dump sink.
2. A separate dump sink may be required.
3. A running water dipper well or a means for supplying clean working utensils must be provided for.
4. A knock box for emptying coffee must be provided. Trash cans may not be used as a knock box.
5. In a fixed or permanent location, the espresso coffee maker shall comply with the Minnesota Plumbing Code, including provisions for backflow protection.
6. If a filtration system is used, it must be NSF approved.

Alcohol/Bar Facilities

1. At least one hand washing sink is required depending on size, more handsinks may be required.
2. A handwashing sink(s) shall be provided for wait staff that dispenses beverages.
3. All equipment, including refrigeration must meet NSF International Standards or equivalent.
4. Provide glass sanitizing equipment. See Warewashing.
5. A separate dump sink shall be provided. If a four-compartment sink is used, the first compartment may be used as the dump sink.
6. Ice bins shall be self-draining to an indirect waste in compliance with the Minnesota Plumbing Code Chapter 4715. All cold plates must be integrally formed into the ice bin unit. Separate drop-in cold plates in ice bins are not permitted. Ice bins must be shielded from soiled activities.
7. Ice bins shall be equipped with protective covers.
8. A liquor store room shall have room finishes similar to those required for food storage rooms.
9. Wood used as the bar top should be a hard-wood, such as maple or oak, and be finished with a minimum of three coats of polyurethane or equivalent.
10. Stone or tile finished bar tops shall have an approved sealer applied so that the surface is impervious to liquids and grease.
11. Other bar top materials must be submitted to the Regulatory Authority for approved prior to installation.
12. Decorative wood may be permitted above back bar countertop if approved by the Regulatory Authority. No other wood is permitted.
13. The interior of bar shall be finished with approved flooring, base cove and wall materials.

TYPICAL BAR CONSTRUCTION EXAMPLE



SINKS

Handwashing Sinks

1. A minimum of one hand washing sink that is easily accessible to all employee food service areas shall be provided. The number of hand washing sinks required is determined by a number of factors, including size of facility and accessibility.
2. All handwashing sinks shall be conveniently located and used for no other purpose.
3. Each handwashing sink shall be provided with hot and cold water through a mixing valve or combination faucet. Self-closing or metering faucet shall be designed to provide a flow of water for at least 15 seconds without the need to reactivate the faucet.
4. An eye wash station may not be connected directly to a handwashing sink. Check OSHA standard for eye wash regulations.
5. Each hand washing lavatory shall have:
 - a. a supply of hand cleaning liquid, soap, nailbrush at the handwash sink in food preparation area.
 - b. individual single service disposable towels.
 - c. if a heated-air hand drying device is used, it may not be the only drying method at a handsink in a food preparation or warewashing area.
 - d. a continuous towel system that supplies the user with a clean towel.

Food Preparation Sinks

1. A separate food preparation sink must be installed if produce and other foods are washed or thawed.
2. Depending on the menu, other factors may warrant the installation of a food prep sink.
3. It is recommended that the food preparation sink have an integral drainboard(s).

Mop Sinks

1. A mop sink shall be provided. The mop sink should be conveniently located.
2. The sink shall have a drain that connect to a sanitary sewer and be supplied with hot and cold water.
3. Mop sink room finishes shall be smooth, durable and easily cleanable. See room finish schedule for details.
4. A mop hanger, broom rack or other device shall be provided for hanging wet mops.
5. If a chemical dispensing system is installed at the mop sink it shall be installed according to Minnesota Plumbing Code.
6. Wye adapters are prohibited.

Dump Sinks

Dump sinks are used when operation produce excess beverage waste that needs to be dumped. Operations such as, bars with mixed drinks, ice, blender drinks, coffee drinks, smoothies or espresso areas may require a dump sink.

1. A three compartment sink, food preparation sink or handwashing sink must not be used as a dump sink.
2. If installing a 4 compartment sink for utensil washing, the first compartment may be used as a dump sink.
3. Dump sinks must be installed in approved countertops such as, stainless steel, granite or solid surface. Plastic laminate is not acceptable.

Three Compartment Sinks

See “Warewashing” section

Rinser Sinks/Blender Stations

1. Plumbing plans must be submitted for approval. Items may include.
 - a. The smoothie blender washer must either discharge to the drainage system into a dedicated vented receptor through an air break, an air gap, or;
 - b. directly to the sanitary drain without a backwater valve is installed on the individual drainage branch.
 - c. The water supply to the washer is located below the spill line of the machine must be protected with an approved backflow preventer.
 - d. Hot water is required to any equipment/fixtures that used for washing.
2. All equipment must be NSF approved.
3. An approved handsink must be conveniently located to the operation.

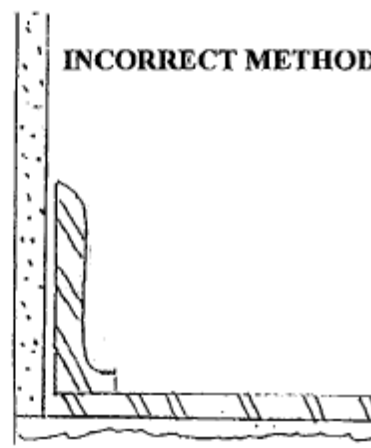
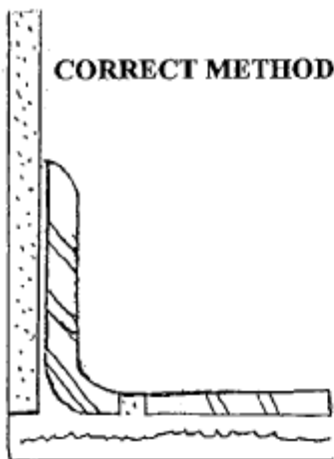
FLOOR, WALLS AND CEILING FINISHES

Floors

Floors shall be constructed of smooth, durable, nonabsorbent, grease-resistant, and easily cleanable material and approved by the Regulatory Authority. Concrete is not an approved flooring finish.

1. **Tile:**
 - a. Examples of approved flooring: Quarry tile, Ceramic tile, porcelain tile and terrazzo.
 - b. Tile grout should be a water-resistant material, such as polyurethane or epoxy based, not exceeding ¼ inch wide.
 - c. A four inch integral base cove shall be installed at the floor/wall junctions. The cove base should be of the same material as the flooring.

Appendix #2 - Coved Base



- d. Integral slant base (ISB) systems must be submitted for review before installation.
 - e. Non-slip quarry tile may not be located underneath equipment.
 - f. All flooring, tile and grout should be sealed per manufacturers' recommendations.
2. **Poured Flooring:**
 - a. Epoxy flooring systems must be approved by the Regulatory Authority before installation.
 - b. An integral minimum four (4) inch base cove should be troweled up the wall. The coving material should be consistent with the floor.

- c. A minimum of three initial finish coats of epoxy should be provided and be at least a 1/4" thick for high heat or cold areas or per manufacturer's specifications.
- d. A minimum of three initial finish coats of epoxy should be provided and be at least an 1/8" thick for low use areas, limited cooking areas or per manufacturer's specifications.
- e. The finish coat thickness of an epoxy floor must comply with manufacturers' specifications.
- f. Aggregate that creates a rough surface may not be applied under foodservice equipment or cabinetry.
- g. A certified installer may be recommended. The type substrate material is based on the manufacturer's recommendations.

3. **Vinyl flooring:**

Vinyl flooring (VCT) flooring is not allowed in kitchens, deli areas, food preparation, dishwashing or janitorial areas, unless the manufacturer recommends it for this use and it meets NSF Standard 52. VCT may be acceptable in dry storage rooms separate from foodservice area when approved by the Regulatory Authority.

4. **Other Flooring Products**

Other flooring products must be submitted to the Regulatory Authority for review and approval.

- 5. **Standards used to evaluate flooring** using compressive comparative strength in pounds per square inch
 - a. Vinyl Flooring 200 psi
 - b. Concrete 3000-8000 psi
 - c. Quarry tile 10,000 psi
 - d. Polymer flooring systems 10,000 - 16,000 psi

Walls

Wall surfaces in splash zones or high moisture areas such as warewashing, food preparation sinks, handsinks and mop sink areas shall be finished with smooth, durable, non-absorbent materials. Approved materials may include:

- 1. A fiberglass re-enforced panel (FRP) or equivalent.
- 2. Ceramic tile that is smooth and cleanable.
- 3. Stainless steel or equivalent materials.
- 4. Enamel painted sheetrock is acceptable in separate dry storage rooms.
- 5. Block walls, where permitted, shall be finished with an epoxy or enamel paint equivalent to an orange peel finish.
- 6. Insulated panels, stainless steel or ceramic tile must be provided behind cooking equipment that is 3.7KW or higher and/or 12000 BTU/hour. FRP is not permitted in this area. These wall finishes must comply with the MN Fire Code. See ventilation section.
- 7. Wood is not an approved material for wall finishes.
- 8. No FRP behind cooking equipment.

Ceilings

Fissured, perforated or rough acoustic tile is not permitted in foodservice areas.

Ceilings in kitchens, bars, service areas and other rooms where food, equipment, single service or linens are stored, employee toilet rooms and mop sink rooms shall be smooth, non-absorbent, durable and easy to clean.

Acceptable materials include:

- 1. smooth vinyl coated acoustic ceiling panels
- 2. semi-gloss painted gypsum board (washable)
- 3. Exposed rafters, bar joists/ trusses over bars or service areas in dining rooms may be allowed if approved by the Regulatory Authority. The ceiling height must be 15 feet or higher.

Finish Schedule Summary

Area of Establishment	Floor			Basecove				Wall					Ceiling			
	Rubber	Quarry/Ceramic Tile	Epoxy Resin Flooring System	Coved Ceramic/Quarry	Vinyl Scred	Stainless Steel	Commercial Rubber Base Cove for use with rubber flooring	Stainless Steel	Ceramic Tile	Fiberglass Reinforced Panel	Epoxy Painted Concrete Block	Painted Drywall	Metal – Non-Galvanized	Painted Drywall	Vinyl-Coated Acoustic Tiles	Open Joists & Rafters
Food Prep Area	■	X	■	X	NA	X	■	X	X	X	X		■	X	X	
Cooking Area	■	X	■	X	NA	X	■	X	X		■		■	X	X	
Dish wash Area	■	X	■	X	NA	X	■	X	X	X	X		■	X	X	
Floorless Walk-In Refrigeration		X	■	X	X	X		NA – Needs to be NSF approved								
Floorless Walk-in Beer Cooler		X	■	X	X	X		NA – Needs to be NSF approved								
Employee Toilet Room	■	X	■	X	NA	X	■	X	X	X	X	X	X	X	X	
Janitorial Room	■	X	■	X	NA	X	■	X	X	X	X		■	X	X	■
Buffet Area	■	X	■	X	NA	X	■	X	X	X	X		■	X	X	
Service Area	■	X	■	X	NA	X	■	X	X	X	X		■	X	X	
Wait Station	■	X	■	X	NA	X	■	X	X	X	X		■	X	X	
Handwash Area	■	X	■	X	NA	X	■	X	X	X	X		■	X	X	
Bar Service	■	X	■	X	NA	X	■	X	X	X	X	■	■	X	X	★
Dry Storage Room	■	X	■	X	NA	X	■	X	X	X	X	X	■	X	X	□

■ - Shaded areas are not allowed.

X - Approved

◆ - Approved, but not recommended

□ - For storage of **unopened case lots** of single-service, food and beverages.

■ - Approval by the Regulatory Authority is required prior to installation.

★ - Sealed rafters or metal beams may be approved for aesthetic reasons.

NA - Not Applicable

Materials and finishes not listed must be approved by the Regulatory Authority prior to installation

DESIGNATED EMPLOYEE TOILET ROOMS

1. Public toilet rooms must meet the requirements of the Minnesota Building, Plumbing and Mechanical code.
2. A toilet room located on the premises shall be completely enclosed and provided with a tight-fitting and self-closing door. This part does not apply to a toilet room that is located outside a food establishment and the toilet room does not open directly into the food establishment, for example a toilet room in a shopping mall or to toilet rooms that are designed without doors and have HVAC systems designed to preclude odors, moisture or other contaminants from escaping.
3. A toilet rooms shall be provided with a minimum of one covered waste receptacle.
4. Refuse containers shall be provided for the disposal of single service towels.
5. Employee toilet rooms, see finish schedule summary under floor, wall, and ceiling finishes letter D.

UTILITIES

Plumbing

All plumbing shall be installed in accordance with the Minnesota State Plumbing Code. Contact the Minnesota Department of Labor and Industry at <http://www.dli.mn.gov/main.asp>.

Utility Service Lines

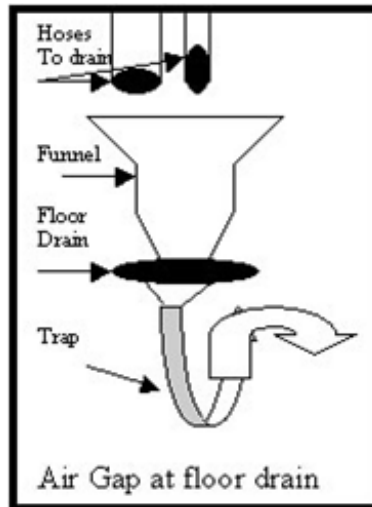
1. Utility service lines and pipes shall not be unnecessarily exposed and enclosed within the walls whenever possible.
2. Exposed utility service lines and pipes shall be installed so they do not obstruct or prevent cleaning of the floors, walls, or ceilings.
3. Exposed utility service lines and pipes shall not be installed directly on the walls or floor, except:
 - a. quick disconnect gas hoses approved by the American Gas Association or NSF International; and
 - b. flexible cords/caps for commercial cooking equipment on casters, listed by Underwriter's Laboratory.
4. Utility lines must not be placed on the floor and must be installed at least 6" off the floor.

Backflow Protection

1. Water inlets shall have an air gap between the water inlet and the flood rim of the fixture. The air gap shall be two times the diameter of the water inlet or faucet.
2. Vacuum breakers shall be installed on any submerged inlet such as toilets, urinals, dishwashers, garbage grinders, and any threaded water outlets. Toilets must have anti-siphon ball cock assemblies.
3. Double check valves with atmospheric vents or reduced zone backflow preventers are required on any water outlet on which a vacuum breaker cannot be installed after the last shut-off valve or solenoid switch (e.g. pressure spray hoses).
4. Backflow prevention shall be located in the water line to the carbonator, preferably between the pump and the carbonator.
5. Chemical dispensing systems shall have approved backflow devices.
6. Wye adapters are not permitted.

Indirect Waste Connections

1. An indirect waste connection discharges waste through a trap and an air gap into the sewer system. Equipment, such as walk-in refrigerators and freezers, ice machines, steam tables, steam cookers, ice bins, salad bars, dipper wells and other similar equipment needs to be indirectly wasted to the sewer.
2. The air gap between the indirect waste and the building drainage system shall be at least twice the effective diameter of the drain, but no less than one inch. All other air gaps shall be at least one inch. (See example)



3. Indirect waste pipes shall not discharge into hand sinks, prep sinks or three-compartment sinks.
4. Hub drains or floor sinks are not recommended. Floor drains are preferred.

Water Supply

An adequate supply of potable water, that meets the needs of the food service establishment shall be provided from a municipal water supply or non-community public water supply meeting the requirements of the Minnesota Well Code, Chapter 4725. A permit for constructing a well is required. Water from a private well must be tested prior to opening.

Water Heater

1. A commercial water heater must be adequately sized to meet the demands of the foodservice facility.
2. Tankless water heaters must be approved by the Regulatory Authority prior to installation. See appendix page 27 for more detail.
3. If water heater is located in the foodservice area, it must be installed on 6" legs or a concrete curb or similar.

Sewage Disposal

1. All water-carried sewage shall be disposed in a municipal sewer system or to an on-site sewage treatment system meeting the requirements of the Minnesota Pollution Control Agency (MPCA) Chapter 7080. A permit for constructing an on-site system is required.
2. A certificate of compliance issued by the MPCA or the local Sewer Authority is required on-site systems. For more information contact the MPCA at <http://www.pca.state.mn.us/>.

Grease Traps

1. Grease traps shall be installed in accordance with the Minnesota Plumbing Code, Chapter 4715.
2. Grease trap installation and requirements are determined by the local Building Official or local Sewer Authority.
3. A grease trap shall be easily accessible for cleaning.
4. Location recommendations:
 - a. Flush mounted units
 - i. Preferred installation
 - ii. Grouted in
 - iii. Do not create an indentation
 - b. Floor mounted (seal to floor)
 - i. Smooth sides, no baffles
 - ii. Provide concrete curb around w/integral cove or a stainless steel cove base
 - iii. At least 6" space surround the unit for cleaning, no storage on top of unit

Overhead Sewer Lines

1. Sewage and waste lines should not be located directly above food preparation, food display, food storage, utensil washing and storage areas.
2. If sewer lines must be installed over the areas listed above, they shall be equipped with a functional seamless pan or gutter.

EMPLOYEE AREA

1. Dressing rooms/areas shall be designated if employees routinely change clothes in the establishment.
2. Lockers or other suitable facilities shall be provided for the orderly storage of employees' clothing and other possessions.
3. Lockers or other suitable facilities shall be located in a designated area where contamination of food, equipment, utensils, linens, and single-service cannot occur.
4. Employee break areas shall be located so that food, equipment, linens, and single-service and single-use articles are protected from contamination.

LAUNDRY FACILITIES

1. A mechanical clothes washer may be used for laundering wiping cloths. A dryer is not required if wiping cloths are the only items washed on site.
2. Wiping cloths must be air dried in an area where there is no exposed food, clean equipment, utensils, linens, or unwrapped single-service or single-use articles.
3. Mechanical washers and dryers shall be located so that food, clean equipment, utensils, linens, or unwrapped single-service or single-use articles are protected from contamination.

SOLID WASTE AND RECYCLABLES

1. An area shall be provided for the storage of solid waste and recyclable materials. The area shall be separated from food preparation and storage areas.
2. The surface of an outdoor storage area for refuse, recyclables and returnables shall be constructed of concrete, asphalt or other nonabsorbent material and sloped to drain.
3. Liquid waste from compacting shall be disposed as sewage.
4. If a garbage enclosure is proposed for installation, it shall be constructed of durable, non-absorbent materials, and provided with a washable finish capable of withstanding frequent cleaning.
5. Interior garbage storage and refuse rooms shall have smooth and easily cleanable wall, floor and ceiling surfaces and be equipped with hot and cold running water and a floor drain connected to the sanitary sewer.

LIGHTING

1. All light fixtures in food preparation, food display, food service, food storage, dishwashing and utensil storage areas shall be shielded, coated or otherwise shatter resistant.
2. 50 foot-candles of shielded light is required:
 - a. Over food preparation areas
 - b. In the hood over cooking equipment
 - c. Warewashing areas
3. 20 foot-candles of shielded light is required:
 - a. Areas behind the bar
 - b. Storage areas and rooms toilets and dressing rooms
 - c. Inside reach in refrigerators/freezers
 - d. Inside walk in cooler/freezers
 - e. Self-service buffets and salad bars
 - f. Toilet rooms

INSECT AND RODENT CONTROL

1. Except in temporary food establishments, openings to a portion of a building that is not part of the food establishment or to the outdoors shall be protected against the entry of insects and rodents by:
 - a. filling or closing holes and other gaps along floors, walls, and ceilings;
 - b. closed, tight-fitting windows and
 - c. solid self-closing, tight-fitting doors.
2. If windows or doors are kept open for ventilation or other purposes, or the food operation is conducted in a temporary food establishment that is not provided with windows and solid doors, the openings shall be protected against the entry of insects and rodents by:
 - a. 16 mesh to 25.4 millimeters (one inch) screens;
 - b. properly designed and installed air curtains or
 - c. other effective means.
3. Devices that are used to electrocute flying insects and that impel insect parts or insect fragments or to trap insects by adherence must be installed so that the device is not located over food, clean equipment, utensils, linens and unwrapped single-service and single-use articles.
4. Unprotected large openings (garage doors):
 - a. Provide screens, air curtains or other effective means.
 - b. Kitchen to be completed separate and closed from the seating area.
 - c. Pest control.
 - d. Garbage removed daily.

MINNESOTA CLEAN INDOOR AIR ACT (MCIAA)

A food establishment shall meet the requirements of the Minnesota Clean Indoor Air Act, Minnesota Statutes, sections 144.411 to 144.417, and rules adopted under those sections.

Refer to the “Freedom to Breathe in Bars and Restaurants” handout or visit

<http://www.health.state.mn.us/divs/eh/indoorair/mciaa/ftb/index.html> for more information.

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OUTDOOR PATIOS AND BARS

Outdoor Bars

A seasonal outdoor beverage facility is an outdoor beverage facility which must be operated in conjunction with a licensed foodservice establishment that can provide support services. The following must be provided for:

1. Compliance with zoning, building, electrical and plumbing codes.
2. The dates of operation must be provided to the Regulatory Authority.
3. Plans and specifications must be submitted to the Regulatory Authority for approval prior to construction.
4. An additional license may be required.
5. The facility must have convenient access to support services, such as utensil washing.
6. Permanent overhead protection must be provided (i.e. roof).
7. Facility must be able to be fully enclosed on the sides when not in use. For example, use of garage doors or durable panels.
8. Operations must cease during adverse weather.
9. Smooth, easily cleanable and durable, stain resistant and non-absorbent flooring (i.e. quarry tile, epoxy poured flooring), integral cove base and walls (i.e. FRP, tile) must be provided.
10. Adequate shielded lighting must be provided if natural lighting is not used.
11. Local regulation governing ventilation and fire protection must be provided.
12. Food preparation must take place inside the licensed food establishment.
13. Ice must be in a self-draining approved covered ice bin and ice melt water must drain to a sanitary sewer.
14. All beverages and utensils must be stored inside the permanent food establishment at the end of the day.
15. A handwashing sinks with hot and cold running water must be provided in each outside beverage area or bar.
16. All water must come from a potable water supply. All water shall be supplied under pressure with a mixing valve.
17. If multiuse utensils are used, warewashing facilities must be provided or all utensils must be cleaned and sanitized inside the permanent foodservice.
18. Provide adequate pest control and garbage removal.

Outdoor Eating Areas/Patios

It is recommended that floors in outdoor seating areas be made of materials that are durable and easily cleanable.

Outdoor Foodservice

Cooking or preparing food is not permitted outside a licensed establishment unless approved by the Regulatory Authority. A separate license may be issued by the Regulatory Authority for establishments that want to cook food outside of a permanent food establishment. When allowed, outside foodservice may operate for no more than 21 days annually and must meet the requirements for a seasonal permanent food stand.

BOARD ESTABLISHMENTS 10 AND UNDER

Food Service

Food service establishments serving 10 or fewer people including staff may, when approved by the Regulatory Authority use domestic equipment instead of NSF International equipment as stated in Minnesota Rule 4626.0505 J. All other requirements of the code apply. For newly built establishments the following list of equipment and finishes should be used.

1. **Refrigerators/Freezers:** The Food and Drug Administration states that residential refrigerators have questionable air flow and cooling ability. Unless commercial equipment is supplied, the menu needs to be restricted to same day food service. This means potentially hazardous foods are prepared and served the same day and no leftovers are kept for more than 4 hours after the meal service.
2. **Stoves/Ovens:** Must be exhausted to the outside of the building and meet building code requirements.
3. **Microwave:** Unless commercial equipment is supplied. Microwaves may not be used to cook potentially hazardous foods.
4. **Handsink(s):** A separate handsink must be supplied in the food preparation area and may not be used for purposes other than handwashing. MN Rule 4626.1110 B.
5. **Food Preparation Sink:** A two basin sink may be used. If the sink is used for rinsing dishes one compartment needs to be dedicated for food preparation only. Rinsing dishes and utensils may not take place in the dedicated compartment of the sink or at the same time as food preparation.
6. **Dishwashing Machine:** The dishwashing machine must provide a sanitizing rinse as the final step and the rinse cycle must meet the requirements of the Minnesota Food Code. Most residential dishwasher cannot meet the requirements of the code and are not durable. A commercial dishmachine is recommended.
7. **Food Prep Counters:** Food prep counters must be made of a material approved for food contact, such as solid surface, stainless steel, ceramic tile. Plastic laminate is not an approved food contact surface.
8. **Nonfood Contact Counters:** Must be corrosion resistant, nonabsorbent and made of a smooth material.
9. **Cabinets:** Wood cabinets may be used if they are sealed with 3 coats of polyurethane, thermofoil or similar material. Wood must be sealed inside cabinets also.
10. **Wood:** Wood is not suitable anywhere in a food preparation area, including around window and door frames or as a base cove material.
11. **Floors:** Commercial vinyl, ceramic tile, quarry tile or certain types of poured floors are acceptable.
12. **Walls:** Sheetrock with washable paint in nonsplash areas. Areas behind sinks need to be tile or some other nonabsorbent material.
13. **Ceilings:** Must be made of smooth and cleanable material. Popcorn ceilings are not allowed.
14. **Mop Sink:** A mop sink must be provided unless alternative methods of cleaning floor are used. Mop water may not be disposed of in 2 compartment sink or handwashing sink.

CATERING

1. Food must be prepared, stored and delivered from a licensed commercial kitchen. Food, equipment or single use items are not allowed to be prepared or stored at a private residence (home).
2. Food must be maintained at safe temperatures during transport and must be transported in a sanitary manner in food grade containers.
3. All food and beverages must be prepared in a permanent licensed food establishment. The food establishment must have at least a medium food establishment license.
4. Must be licensed as a medium or large establishment.
5. Portable handwashing may be required.

RECIRCULATING HOODS

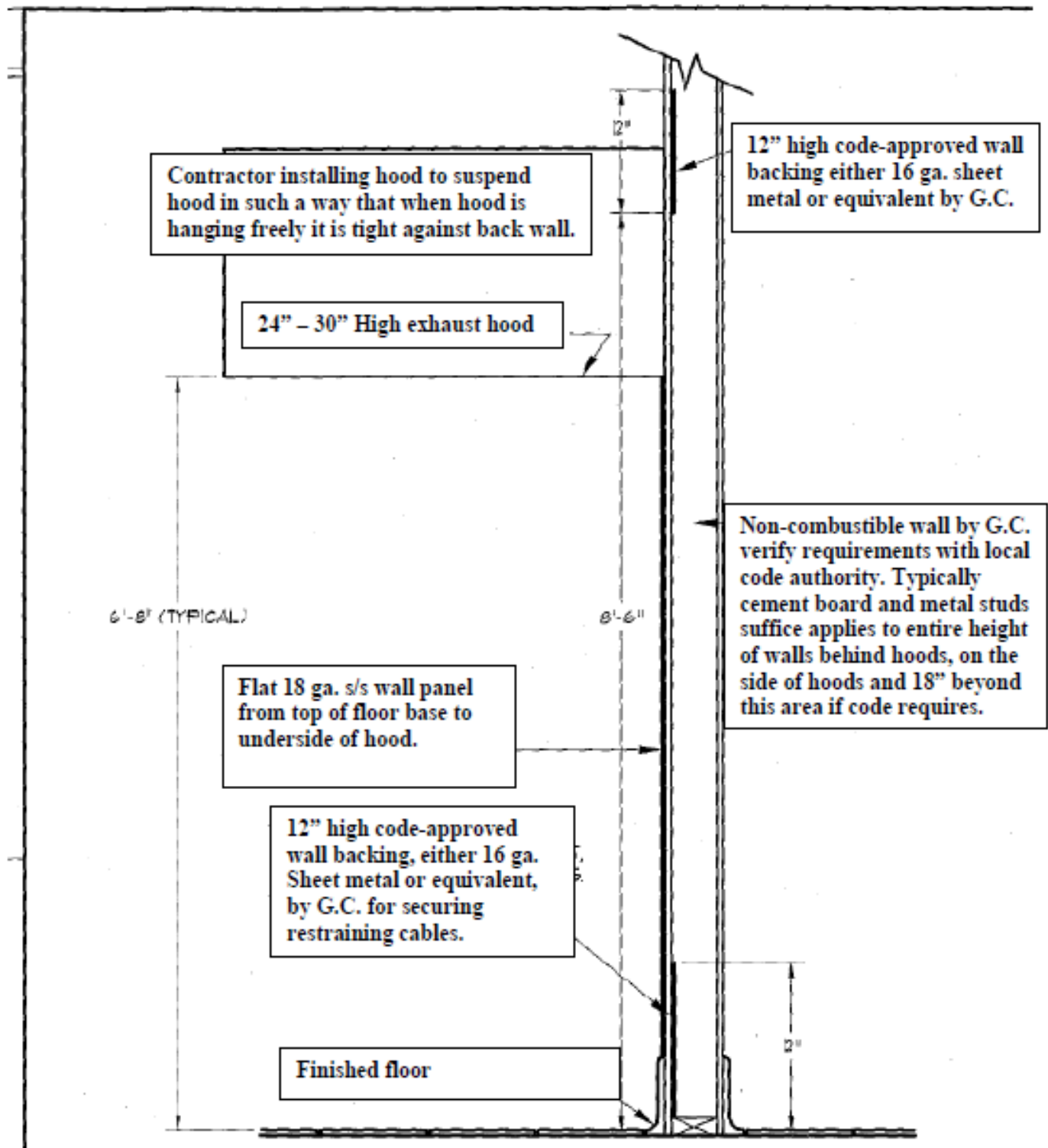
1. The Building official must be contacted regarding the installation of this hood system.
2. The operations and maintenance manual for the recirculating hood must be located on site.
3. The recirculating hood system must be installed and maintained in accordance to the instructions in the manufacturers' manual.
4. The instructions listed in the manufacturer's manual must be followed if it requires more frequent cleaning and inspection outlined in NFPA 96, Chapter 13.
5. The following is a partial list of minimum required maintenance criteria, as outline in National Fire Protection Association (NFPA) 96, Chapter 13 for recirculating systems.
 - a. Inspection of the UL 300 listed fire suppression system by qualified service personnel every six months in accordance with the Minnesota Fire Code.
 - b. Filters shall be cleaned or replaced in accordance with the manufacturer's instructions.

TANKLESS WATER HEATERS

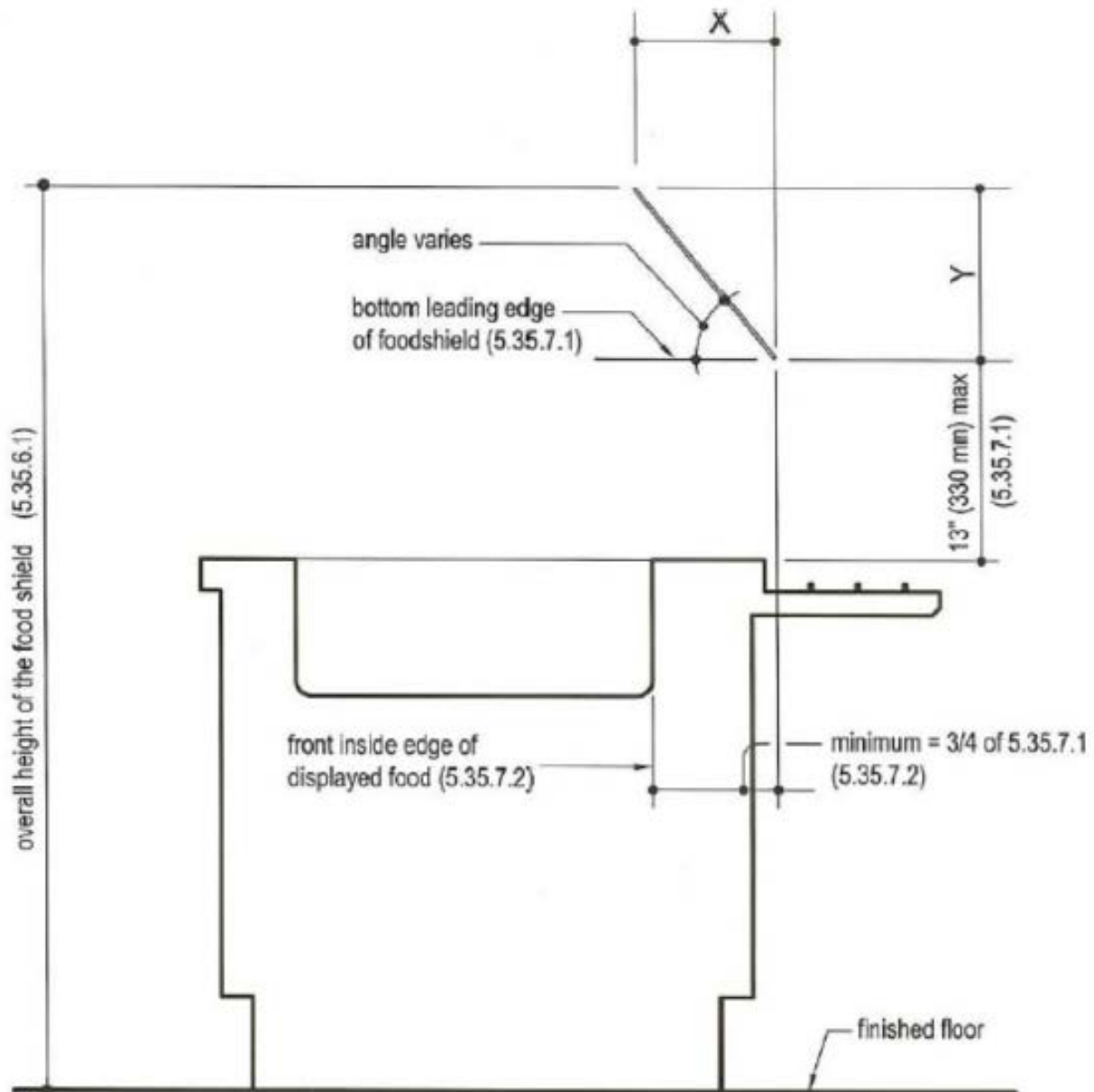
Prior to installation, submit proposal to use tankless water heaters to the Regulatory Authority for review.

1. Contact the manufacturer to determine adequate sizing and proper number of units. Numerous units may need to be installed, per manufacturer's recommendations.
2. The unit's audible/visual alarm must be checked frequently to determine when descaling and maintenance is needed.
3. The unit must be properly descaled when the alarm indicates. Descaling must be done according to manufacturer's recommendations.
4. A water softener is recommended when the water hardness is over 9 grains. Recommended minimum water quality hardness is between 4 grains to 9 grains.
5. A maintenance schedule must be kept and be available for review.
6. All other local permits and codes (i.e. plumbing permit) must be met prior to installation.
7. The manufacturer recommends the use of a tankless valve kit when connecting the water lines to the water heater. This kit will assist in flushing the heat exchanger in areas where water quality issues exist.
8. Follow manufacturer's use and maintenance instructions must be stored at the facility.
9. All utility connections must be enclosed in a wall if installed in a foodservice area. No exposed piping.
10. When used with a warewashing machine a booster heater is recommended.
11. Water heaters location will be evaluated by the regulatory authority.

WALL EXHAUST HOOD DETAIL

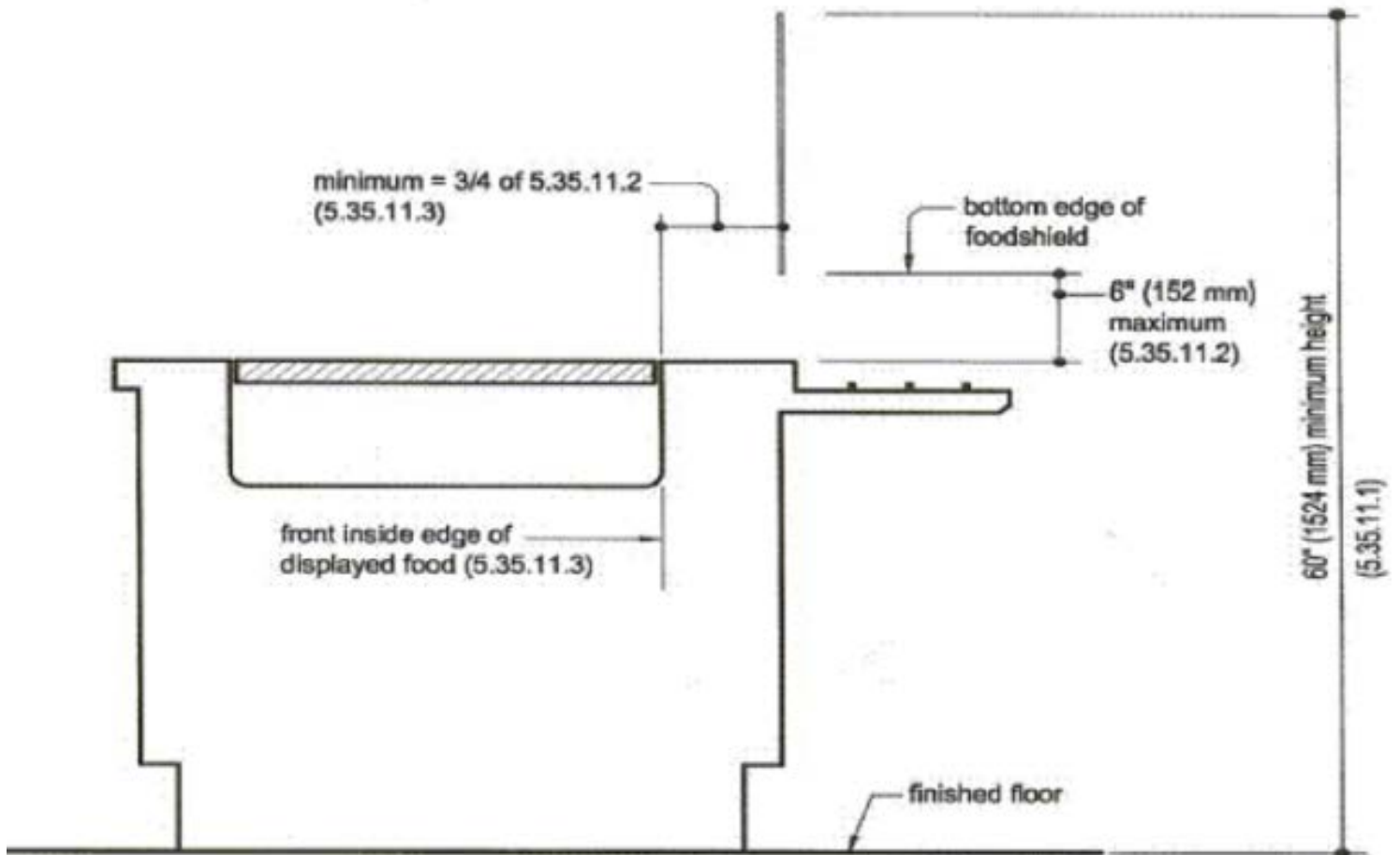


FOODS SHEILDS, EXAMPLE 1



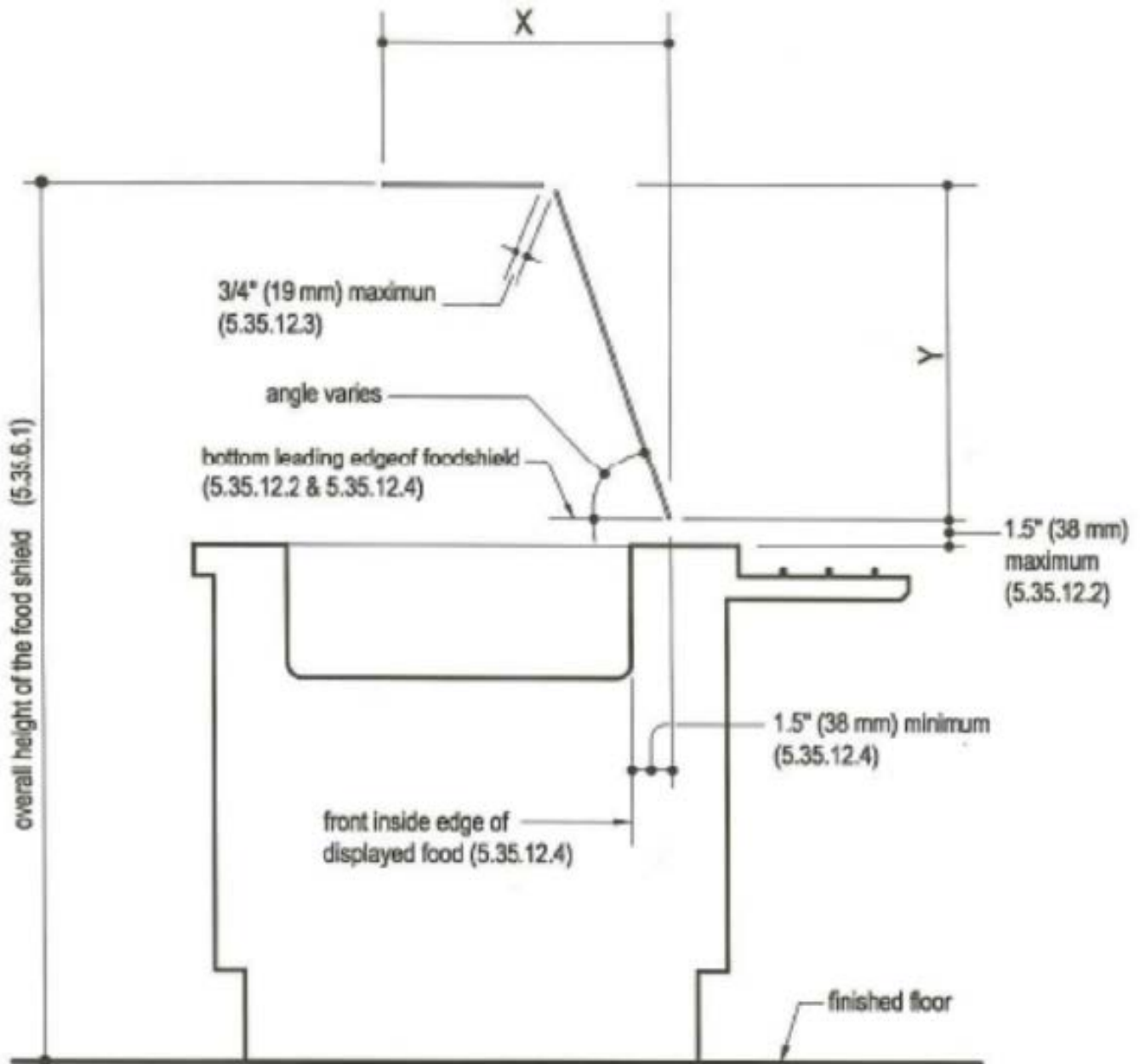
Example 1 – Self Service Food Shield

FOODS SHEILDS, EXAMPLE 2



Example 2 – Cooking/Carving Food Shield

FOODS SHEILDS, EXAMPLE 3



Example 3 – Cafeteria Counter Food Shield